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had his right hand free, and in it he held a *chowrie* (brush of yak's tails) with which he kept time. At another ceremony an old man in the red robe of a lama approached the devi, and washed the masks with mint and water, offering incense, flowers, fruit, and bread. A number of birds, some black, some white, were killed, and the blood sprinkled on the devi, afterwards the rest was dashed over the building. A part of the service was a mock battle with walnuts and pine cones, between the priest and his attendants from the balcony of the temple, and the people below. Meanwhile the birds were cooked, and they are now served, the women eating first. The devis have a way of intimating when they wish to go visiting. The reception of one devi by another is like two rajahs meeting. There is a great amount of bowing and shaking which terminates in the host getting behind and the procession marching to the village temple. When the visitor returns home the host accompanies it to the borders of the village. Mr. Simpson, who describes the pujah ceremonies first draws attention to the ark and sacrifices of the Jews and the Egyptians, and then views with more favor the car-festival as the parent of these primitive services. To most people unacquainted with India the rath yatra, or car-festival, is associated only with Jagganath, at Puri, but this is not so; cars are kept in the temples over the whole of Southern India. Although not connected with Hinduism, the Buddhists also had a similar festival. If it was common to the whole of India, it is easy to see that where there were no roads for a car on wheels, the god would have to be carried on men's shoulders, and the size would be reduced to suit circumstances. At one of the pujahs a Brahmin walked barefooted thirty steps on the sharp edges of hatchets.—*J. R. A. Soc., XVI., 13–30.*

THE KANSAS CITY REVIEW.—One of our best sources of information respecting the archæology of the Missouri region, is the *Kansas City Review.* The editor, Mr. Theo. S. Case, has conducted this journal for seven years, at considerable expense to himself, in order to contribute his share towards the intellectual improvement of his section. There is a rumor that the *Review* is in danger of stopping through want of patronage. We regret to hear this very much. The late Dr. Ruggles said to the writer on one occasion, "I do not read half the books and magazines I buy. I take them because I am afraid the authors would suffer without my little help." Now this is one motive, and there are many more why we should not let good scientific literature languish through lack of our aid.

MICROSCOPY.[1]

TREATMENT OF THE EGGS OF THE SPIDER (*Agalena nævia*).—The eggs of our common grass spider (*Agalena nævia*) are deposited in white silky cocoons, which are attached to the under side of loosened bark, fence boards, and other sheltered places. They are very abundant in September and October, and during the entire winter cocoons may be found with eggs in early stages of development. This species thrives well in captivity, so that there is no difficulty in obtaining eggs freshly laid.

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[1] Edited by Dr. C. O. WHITMAN, Mus. Comparative Zoology, Cambridge, Mass.

For studying the egg in a living condition the long-used method of immersion in oil is excellent. The oil should be perfectly clear and odorless. The external features can be studied to better advantage by mounting the eggs in alcohol after they have been freed from the chorion and stained. Another valuable method for surface study consists in clearing the already stained egg in clove oil. The thickness of the blastoderm is most easily determined in this way.

The best method of hardening preparatory to sectioning is that of heating in water to about 80° C., and then, after cooling slowly, treating with the usual grades of alcohol. Good results were obtained with Perenyi's fluid, which rendered the yolk less brittle. Osmic acid does not penetrate the chorion, and chromic acid or acid alcohol are not easily soaked out on account of the thickness of the chorion.

Borax-carmine proved, on the whole, to be the best staining fluid. It is difficult to make the dye penetrate the chorion, and, after hatching, the cuticula forms a similar obstacle. This difficulty may be overcome by prolonged immersion in the staining fluid. In some cases seventy-two hours were required to obtain a sufficient depth of color. In order to avoid maceration, which would result from so long continued immersion in a weak alcoholic dye, the staining process may be interrupted at the end of every twenty-four hours, by transferring to seventy per cent alcohol for an hour or more.

After most methods of hardening, the yolk becomes very brittle, and the sections crumble. This difficulty may be overcome by collodionizing the cut surface before making each section, in the manner described by Dr. Mark (AMER. NATURALIST, June, 1885).—*Wm. A. Locy.*

THE ROCKING MICROTOME.[1]—The Cambridge (Eng.) Scientific Instrument Company have just introduced a new type of microtome, in which the sliding movement of parts is replaced by a rotary one. The ribbon of sections falls by its own weight direct from the razor on to a sheet of paper. The instrument is simple in construction and is sold at the comparatively moderate price of $26.

The chief objection to this microtome is, that it is adapted to only one mode of section-cutting, namely, that of producing ribbons of sections imbedded in paraffine. It could not be used for cutting collodion sections, nor could it be conveniently employed in the Duval-Mason method, where the block of paraffine is col-

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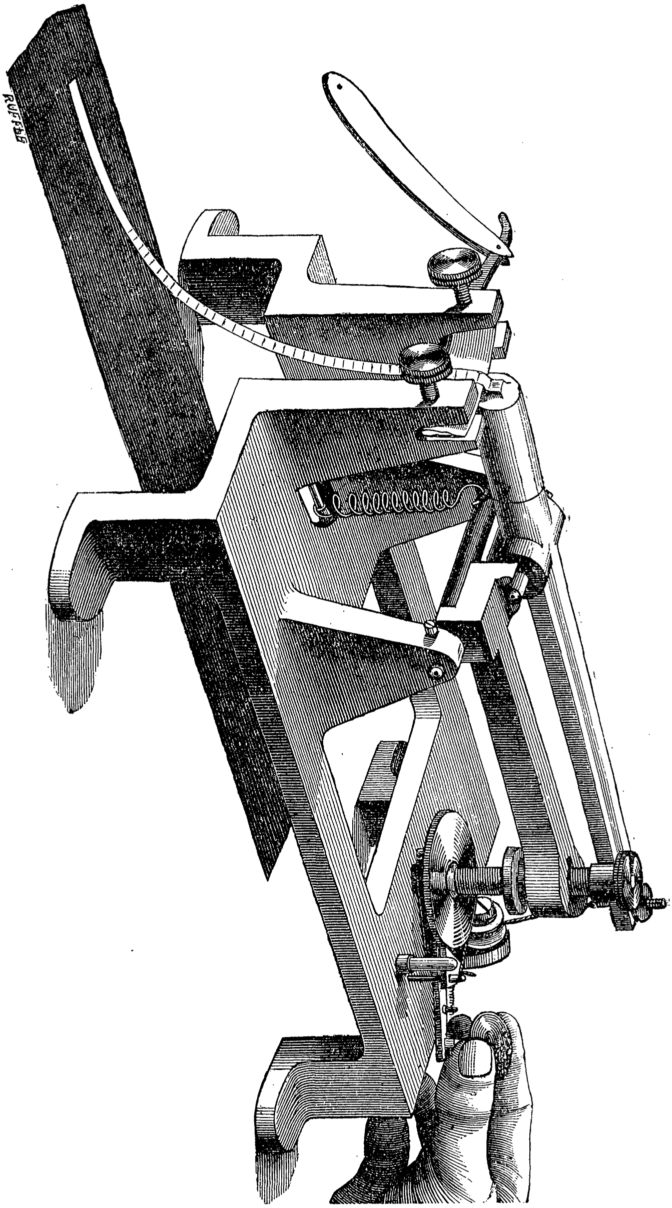
[1] Journ. Roy. Mic. Soc., June, 1885, p. 549.



The Rocking Microtome.

lodionized before making each section. The position of the object is such that it can not be conveniently watched during the process of cutting; and this appears to me to form another serious objection to the instrument.

The construction of the instrument is as follows: Two uprights are cast on the base plate of the instrument, and are provided with slots at the top, into which the razor is placed and clamped by two screws with milled heads.

The imbedded object is cemented with paraffine into a brass tube which fits tightly on to the end of a cast-iron lever. This tube can be made to slide backwards or forwards so as to bring the imbedded object near to the razor ready for adjusting. The cast-iron lever is pivoted at about three inches from the end of the tube. To the other end of this lever is attached a cord by which the motion is given and the object to be cut brought across the edge of the razor. The bearings of the pivot are V-shaped grooves which themselves form part of another pivoted system.

Immediately under the first pair of V's is another pair of inverted V's, which rest on a rod fixed to two uprights cast on the base plate. A horizontal arm projects at right angles to the plane of the two sets of V's, the whole being parts of the same casting. On the end of the horizontal arm is a boss with a hole in it, through which a screw passes freely. The bottom of the boss is turned out spherically, and into it fits a spherical nut working on the screw. The bottom of the screw rests on a pin fixed in the base plate.

It will be seen that the effect of turning the screw is to raise or lower the end of the horizontal arm, and therefore to move backwards or forwards the upper pair of V's, and with them the lever and object to be cut. The top of the screw is provided with a milled head, which may be used to adjust the object to the cutting distance.

The distance between the centers of the two pivoted systems is one inch, and the distance of the screw from the fixed rod is six and a quarter inches. The thread of the screw is twenty-five to the inch; thus if the screw is turned once round, the object to be cut will be moved forward $\frac{1}{25}$ of $\frac{1}{6\frac{1}{4}}$ or $\frac{1}{156}$ of an inch.

The turning of the screw is effected automatically as follows: A wheel with a milling on the edge is fixed to the bottom of the screw. An arm to which a pawl is attached rotates about the pin which supports the screw.

This arm is moved backwards and forwards by hand or by a cord attached to any convenient motor. When the arm is moved forward the pawl engages in the milling and turns the wheel; when the arm is moved back the pawl slips over the milling without turning the wheel. A stop acting against the pawl itself prevents any possibility of the wheel turning, by its own momentum, more than the required amount. The arm is always moved backwards and forwards, between two stops, a definite amount, but the amount the wheel is turned is varied by an adjustable sector, which engages a pin fixed to the pawl and prevents the pawl from engaging the milling on the wheel. By adjusting the position of this sector the feed can be varied from nothing to about $\frac{5}{32}$ of a turn, and hence since the screw has twenty-five threads to the inch, the thickness of the sections cut can be varied from a minimum, depending on the perfection with which the razor is sharpened, to a maximum of $\frac{5}{32}$ of $\frac{1}{25}$ of $\frac{1}{6\frac{1}{4}}$ or $\frac{1}{1000}$ of a turn. The practical minimum thickness obtainable with a good razor is approximately $\frac{1}{40000}$ of an inch. The value of the teeth on the milled wheel are as follows:

1 tooth of the milled wheel $= \frac{1}{40000}$ of an inch $= .000625^{mm}$
2 teeth " " " $= \frac{1}{20000}$ " " $= .001250^{mm}$
4 " " " " $= \frac{1}{10000}$ " " $= .0025^{mm}$
16 " " " " $= \frac{1}{2500}$ " " $= .01^{mm}$

The movement of the lever which carries the embedded object is effected by a string attached to the end of the lever. This string passes under a pulley and is fastened to the arm carrying the pawl. Attached to the other end of the lever is a spring pulling downwards.

When the arm is moved forwards the feed takes place, the string is pulled, the embedded object is raised past the razor, and the string is stretched. When the arm is allowed to move back the spring draws the imbedded object across the edge of the razor, and the section is cut. The string is attached to the lever by a screw which allows the position of the embedded object to be adjusted so that, at the end of the forward stroke, it is only just past the edge of the razor. This is an important adjustment, as it causes the razor to commence the cut when the object is traveling slowly, and produces the most favorable conditions for the sections to adhere to each other.

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SCIENTIFIC NEWS.

— To the report of the Commissioner of Fisheries of New York in charge of the oyster investigation is appended Dr. H. J. Rice's excellent tract on the propagation and natural history of the American oyster. An account is first given of experiments carried on at Cold Spring harbor on the propagation of the oyster, and then follows notes on the distribution of the animal, the structure of its shell, the gross anatomy of the animal including the reproductive organs, succeeded by chapters on seed oysters, the food of the oyster, its coloration, its artificial propagation, the methods of obtaining spat, and the friends and enemies of the oyster. Reference is made to the supposed method of extraction